IDAHO
DEPARTMENT OF PUBLIC LANDS

GORDON C. TROMBLEY
COMMISSIONER

ADDRESS REPLY TO:

DEPARTMENT OF PUBLIC LANDS
COEUR D' ALENE OFFICE
P.O. BOX 670, COEUR D' ALENE, IDAHO 83814

December 28, 1973

5200

TO: Members of the Task Force

FROM: R. L. Livingston, Chairman - Douglas-fir Tussock Moth Task Force, NRFPAC

SUBJECT: Results of our Cooperative Tussock Moth Egg Mass Survey

Our egg mass survey started with a training session on October 3, 1973, and continued with some crews sampling until the 12th of November. The results are included in the accompanying report.

Since the completion of the survey, representatives of the Forest Service, Region I and Region 6, and Idaho, Oregon and Washington have compiled an environmental impact statement to support a request for the use of DDT. The request will probably be made in early January at which time the impact statement will be made available to the public.

Ladd Livingston

RLL:drj
Enclosure

please send photocopy to Fernan and St. Maries Districts R.A.C.

Done 1/10/74 VMB.

IDAHO PANHANDLE N. F.

X = ACTION		√ = INFO	
	FS	✓	OPERATIONS
1/14	DEPUTY		Law
	RESOURCE	✓	Res ✓
	Wtrsh		Pers
	Fire		Adm Sv
1/7	Post Sale		Mgt A
	Pre Sale	✓	B & F
	Rec/L		Mail File
	Rg/WL		
	Prog A		
	Mnrls		

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	PLANNER	✓	SERVICES
	Coord Use		Plans
	Fish Biol		Env
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	Illustr		

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DOUGLAS-FIR TUSSOCK MOTH TASK FORCE
NORTHERN ROCKIES FOREST PEST ACTION COUNCIL

Biological Evaluation - Douglas-Fir Tussock Moth - 1973 Fall Egg Mass Survey

Introduction

The Douglas-fir tussock moth, Orgyia pseudotsugata McDonnough is an important defoliator of true firs, Abies spp. L., and Douglas-fir Pseudotsuga menziesii var. glauca (Beissner) Franco over much of western North America. In northern Idaho the preferred hosts are Douglas-fir and grand fir.

Damage to trees is caused by the newly hatched larvae feeding on the new foliage, causing it to shrivel and turn brown. By mid-July the larger larvae feed on both new and old foliage, first stripping the tops of the trees and outermost portions of the branches, then feeding into the inner crown. While many trees are only top killed, occasionally they may be completely defoliated and killed in one season. Trees weakened through defoliation have been reported to suffer pronounced growth loss, and many are subsequently attacked by bark beetles.

Population levels of the Douglas-fir tussock moth are cyclic in nature with outbreaks normally occurring about every 6 to 10 years. The last infestation declined in 1965.

The first recent reports of tussock moth activity were in 1971 and 1972 from home owners in Idaho and Montana communities reporting defoliation on ornamental trees. In 1972, about 300 acres of aerially visible defoliation was detected in eastern Washington south of Kettle Falls. Isolated reports of tussock moth larvae and egg masses were received from parts of Idaho in the fall of 1972. An egg mass survey conducted in February of 1973 indicated there were at least 50,000 acres of infested land. During the early summer of 1973 tussock moth defoliation became conspicuous in scattered areas of northern Idaho, and by the late summer nearly 100,000 acres of aerially visible defoliation had been mapped.

Because of the potential this insect has to permanently damage trees in one or two years, a broad-scale egg mass survey was conducted to assess areas that now require applied control in 1974. This survey conducted in the fall of 1973 was a cooperative effort between the State of Idaho, Department of Public Lands, the U.S. Forest Service R-1, Potlatch Corporation, Bureau of Indian Affairs, Corps of Engineers and University of Idaho.

Survey Objectives

The following were the objectives of the egg mass survey:

1. Determine potential 1974 tussock moth population levels in and adjacent to the aerially visible defoliated areas.

2. Determine extent of infested area outside aerially visible defoliated areas.

3. Predict potential defoliation for 1974.

4. Classify areas where applied control may be advisable.

5. Determine the effect natural factors (parasites, predators, disease, etc.) may have on the 1974 tussock moth population.

Results of this survey provide the biological basis for recommendations for or against applied control in the various infested areas of northern Idaho.

Survey Methods

To facilitate assigning responsibilities, the proposed survey area was divided into 5 reporting units (Coeur d'Alene, St. Joe, Clearwater, Craigmont, and Nezperce).

Sample plots were tentatively marked on maps to gather information within and around all known defoliated areas and within adjacent areas where defoliation had occurred in past outbreaks. Plots were established on the basis of access and availability of host type. Where access was available every section within the defoliated areas was sampled. Helicopters were used in some of the roadless areas of the Nezperce unit.

Eight trees were sampled in each plot. The sample consisted of four limbs cut from the midcrown of each tree. The extreme length and width of the foliar area of each branch, the number of new and old egg masses and the presence or absence of cocoons on each branch was recorded. In small spot infestations (50 acres or less) of pure Douglas-fir type additional information was gathered. After the plot sample had been taken the crew moved to the outer edge of the defoliated area then proceeded, on a compass line, for 10 chains. At this point they looked for egg masses or cocoons on surrounding trees and recorded their presence or absence.

The survey data was utilized to compute the number of new and old egg masses per thousand square inches of foliage, the ratio of old to new egg masses and the abundance of cocoons for each plot. The resultant data was analyzed by the following key* to determine areas warranting a control effort at this time. Maps were prepared plotting this information and all other information available on current distribution of the tussock moth. Further biological analyses will be made prior to final control decisions.

1. No survey data collected in the area1/ (6)
1A. Survey data collected in the area. (2)

2. No new egg masses on intensity or time plots - low risk.
2A. New egg masses on intensity or time plots - (3)

*Key and criteria for risk rating developed by the working group of the Interagency Douglas-fir Tussock Moth Steering Committee.

1/ Usually a land section of approximately 640 acres in size but can be smaller if necessary in order to determine treatment needs more precisely.

3. Egg mass density equal to or greater than .1 $^{M}/in^{2}$ - high risk. (7)
3A. Egg mass density less than .1 $^{M}/in^{2}$. (4)

4. New to old egg mass ratio 1:1 or greater - high risk. (7)
4A. New to old egg mass ration less than 1:1. (5)

5. Average egg mass count on time plots 15 or more - high risk. (7)
5A. Average egg mass count on time plots less than 15 - low risk.

6. Unsampled areas (sections) adjacent to one or more areas (sections) which equal or exceed the high risk criteria above - high risk. (11)**
6A. Unsampled areas (sections) not adjacent to one or more areas (sections) which equal or exceed the high risk criteria above - low risk.

**Other portions of the key were not used at this time.

Results

A total of 428 plots were established in 420 sections. The map shows the general area of total activity for 1974. The total area has been broken down into the categories in Table 1. Narrative descriptions of each unit follow the table.

TABLE 1

ACRES OF TOTAL OUTBREAK, PROPOSED SPRAY AND SPRAY OPTION

Unit	Outbreak	Proposed Spray	Spray Option
Coeur d'Alene			
State and Private		4,172	2,008
Forest Service		29,966	12,726
SUBTOTAL	55,081	34,138	14,734
St. Joe			
Coeur d'Alene IR		4,500	0
State and Private		45,352	36,681
Forest Service		14,927	5,615
SUBTOTAL	234,549	64,779	42,296
Clearwater			
State and Private		2,686	861
Forest Service		1,747	547
SUBTOTAL	81,552	4,433	1,408
Craigmont			
State and Private		4,762	7,162
Forest Service		0	0
SUBTOTAL	21,338	4,762	7,162
Nezperce			
State and Private		1,312	1,045
Forest Service		32,189	14,909
SUBTOTAL	112,301	33,501	15,954
NORTH IDAHO TOTAL	504,821	141,613	81,554

COEUR D'ALENE UNIT.-- The Coeur d'Alene Unit (Map 1) consists of an area limited on the south and east by the Coeur d'Alene River, by Coeur d'Alene Lake on the west, and extending north across Interstate 90 into the headwaters of the Skitwish, Marie, Stoney, and Curran Creek drainages.

An isolated population site due east of Dalton Gardens, Idaho on the ridge containing East and West Canfield Buttes was also sampled.

Aerial detection surveys during 1973 found 1880 acres with visible defoliation due to the tussock moth. Fall egg mass surveys indicated activity (cocoons, larvae, or old egg masses) on a total of 55,081 acres. Of this, 34,138 acres have a population that warrants control, with an additional acres of potential control area pending further investigation.

This area did not show any defoliation in 1972 and appears to contain a building population. There is a distinct possibility that this unit could increase in size during 1974 as survey crews found tussock moth cocoons in most plots on the northern edge of the area. The infestation may extend farther north than could be sampled at this time.

ST. JOE UNIT.--This area is the largest unit within the current Idaho infestation. It is roughly bordered on the north by the St. Joe River, on the west by the Idaho-Washington border, on the south by Idaho Highway No. 81, leading from Moscow to Elk River and extending to the east as far as Range 3 East, Boise Meridian.

Aerial detection surveys conducted in 1973 showed a total of 70,000 acres with varying degrees of defoliation. No defoliation was observed in 1972. Subsequent monitoring has shown the Douglas-fir tussock moth to be active on approximately 234,549 acres. Fall egg mass surveys have shown that there is a high risk for damage on 64,779 acres with populations being high enough to recommend control. In addition there are 42,296 acres with populations that may warrant control pending further investigation.

The Douglas-fir tussock moth population in this unit is in numerous widely scattered epicenters. The largest population centers are in a chain between Plummer and Moscow. These contain the majority of the areas where control is recommended. This is the same basic area where outbreaks of the tussock moth developed in 1945 and 1964.

CLEARWATER UNIT.--Only 120 acres were defoliated in this unit which is in Clearwater County between the North Fork of the Clearwater River and Middle Fork to the south.

Egg mass counts classified 4,433 acres as high risk for defoliation in 1974 and control is recommended. There is potential for defoliation of an additional 1,408 acres which may also need treatment in 1974. There was evidence of tussock moth populations in 81,552 acres within this unit.

CRAIGMONT UNIT.--This infestation lies in the area between the Salmon and Clearwater Rivers. The known population is in an irregular band surrounding the Soldiers Meadows Reservoir area, southwest of Winchester and southeast of Lewiston.

Aerial surveys during 1973 showed 4,000 acres with visible defoliation. Subsequent egg mass surveys and ground reconnaissance have shown tussock moth activity in a total of 21,338 acres. Of this total 4,762 acres have populations that warrant control with an additional 7,162 acres that may need treatment pending further investigation.

Immediately to the south of this unit there is an extensive infestation of the spruce budworm. The defoliation caused by the budworm may be covering up additional Douglas-fir tussock moth populations similar to that in the Nezperce Unit.

This is the first time that the Douglas-fir tussock moth has been found in this area.

NEZPERCE NATIONAL FOREST UNIT.--This unit lies in Idaho County between the Middle Fork of the Clearwater River to the north and the Salmon River to the south. Defoliation occurring in 1973 was visible from the air on 23,000 acres mainly on the Selway and Salmon River Range Districts. Damage was heaviest on the Salmon District and some tree killing occurred in pure stands of Douglas-fir from 10-50 acres in size.

On the Salmon District, egg mass counts classified 11,587 acres as high risk and control is recommended for these areas. In addition, further sampling may indicate another 6,915 acres will need treatment. Altogether, there was tussock moth activity within 33,796 acres on this district.

On the Selway District, 21,914 acres need treatment with an additional 9,039 acres of potential control area. Tussock moth activity was found on a total of 78,505 acres.

Totals for the Nezperce Unit are: outbreak area = 116,301
Proposed spray area = 33,501, spray potential area = 15,954

Summary

Within the outbreak boundaries there are numerous areas presently not included within the proposed or potential spray blocks that are thought to harbor tussock moth populations capable of causing unacceptable damage. Generally they are adjacent to existing proposed spray blocks. These areas were not sampled due to lack of access or suitable sample trees. Control decisions for these areas will be based on further evaluations including an aerial survey made after egg hatch and just prior to the intended treatment date.

At this time observations on virus and parasite incidence indicate that they will not be an important factor in controlling the tussock moth infestation in 1974. Further biological observations will be made in early 1974. The low level of natural control agents coupled with high new-to-old egg mass ratios and increasing density of new egg masses all indicate a high potential for unacceptable damage in 1974.

MAP - 1

DISTRIBUTION OF DOUGLAS-FIR TUSSOCK MOTH
ACTIVITY IN NORTHERN IDAHO - 1973